

**UT3006****Power MOSFET****55A, 30V N-CHANNEL
ENHANCEMENT MODE
POWER MOSFET****DESCRIPTION**

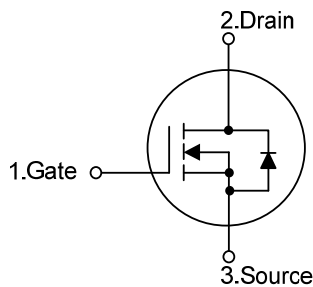
The UTC **UT3006** is a N-channel enhancement MOSFET using UTC's advanced technology to provide the customers with perfect $R_{DS(ON)}$, cost-effectiveness and high switching speed.

This UTC **UT3006** is suitable for DC/DC converters, etc.

FEATURES

* $R_{DS(ON)} \leq 9.0 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=30\text{A}$

* High Switching Speed

SYMBOL**ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT3006L-TN3-R	UT3006G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UT3006L-K08-5060-R	UT3006G-K08-5060-R	DFN5060-8	S	S	S	G	D	D	D	D	Tape Reel

Note: Pin Assignment: G: Gate D: Drain S: Source

UT3006G-TN3-R 		(1) R: Tape Reel (2) TN3: TO-252, K08-5060: DFN5060-8 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING

TO-252	DFN5060-8

■ ABSOLUTE MAXIMUM RATINGS ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V_{DSS}	30	V
Gate-Source Voltage			V_{GSS}	± 20	V
Drain Current	Continuous	$T_C=25^{\circ}\text{C}$	I_D	55	A
	$V_{GS}=10\text{V}$	$T_C=100^{\circ}\text{C}$		39	A
	Pulsed (Note 2)		I_{DM}	160	A
Avalanche Energy	Single Pulsed (Note 3)		E_{AS}	88	mJ
Power Dissipation ($T_C=25^{\circ}\text{C}$)		TO-252	P_D	54	W
		DFN5060-8		28	W
Junction Temperature			T_J	+175	$^{\circ}\text{C}$
Storage Temperature			T_{STG}	-55 ~ +175	$^{\circ}\text{C}$

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Pulse test.

3. $L=0.1\text{mH}$, $I_{AS}=42\text{A}$, $V_{DD}=30\text{V}$, $R_G=25\Omega$, Starting $T_J = 25^{\circ}\text{C}$

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-252	θ_{JA}	50	$^{\circ}\text{C/W}$
	DFN5060-8		65	$^{\circ}\text{C/W}$
Junction to Case	TO-252	θ_{JC}	2.3	$^{\circ}\text{C/W}$
	DFN5060-8		4.4	$^{\circ}\text{C/W}$

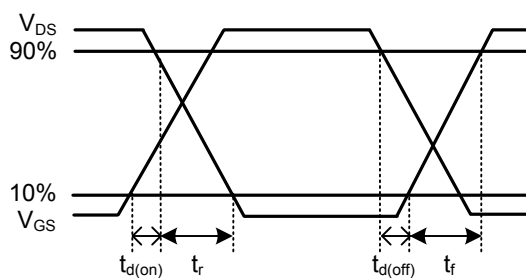
Note: Device mounted on FR-4 substrate P_c board, 2oz copper, with 1inch square copper plate.

■ ELECTRICAL CHARACTERISTICS ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

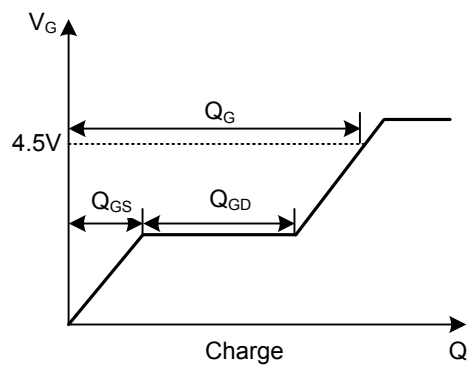
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	30			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =30V, V _{GS} =0V			10	μA
Gate- Source Leakage Current	Forward	I _{GSS}	V _{DS} =0V, V _{GS} =+20V			+100	nA
	Reverse		V _{DS} =0V, V _{GS} =-20V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.0		3.0	V
Static Drain-Source On-State Resistance (Note)		R _{DS(ON)}	V _{GS} =10V, I _D =30A			9	mΩ
			V _{GS} =4.5V, I _D =20A			16	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		2200		pF
Output Capacitance		C _{OSS}			420		pF
Reverse Transfer Capacitance		C _{RSS}			365		pF
Gate Resistance		R _G	f=1.0MHz		1.9		Ω
SWITCHING PARAMETERS							
Total Gate Charge (Note)		Q _G	V _{GS} =4.5V, V _{DS} =24V, I _D =30A		32		nC
Gate to Source Charge		Q _{GS}			8		nC
Gate to Drain Charge		Q _{GD}			18		nC
Turn-ON Delay Time (Note)		t _{D(ON)}	V _{DS} =15V, I _D =30A, R _G =3.3Ω, V _{GS} =10V, R _D =0.5 Ω		14		ns
Rise Time		t _R			19		ns
Turn-OFF Delay Time		t _{D(OFF)}			42		ns
Fall-Time		t _F			35		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				55	A
Maximum Body-Diode Pulsed Current		I _{SM}				160	A
Drain-Source Diode Forward Voltage (Note)		V _{SD}	I _S =30A, V _{GS} =0V			1.2	V

Note: Pulse test.

■ TEST CIRCUITS AND WAVEFORMS

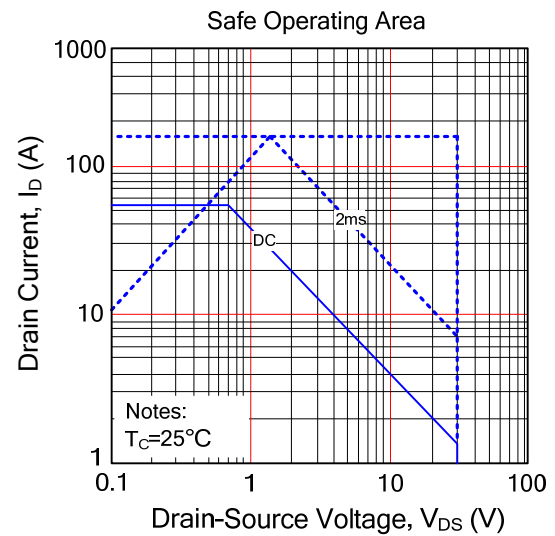
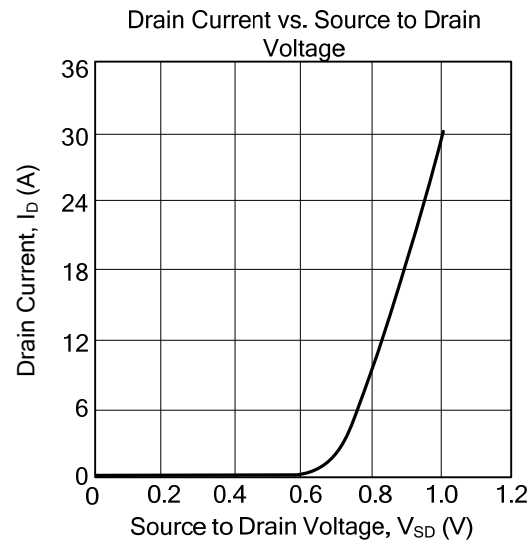


Switching Time Waveform



Gate Charge Waveform

TYPICAL CHARACTERISTICS



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